Socio Economic Disparity and Development: A Case Study of The Jungle Mahal Region of Purulia District, West Bengal, India.

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1.Introduction:

Regional disparities in development have been a persistent and defining feature of India's post-independence growth trajectory. Despite decades of planned economic development aimed at equitable progress, significant imbalances persist across states and districts, reflecting uneven access to resources, infrastructure, and opportunities. While geographical diversity and varying resource endowments contribute to these disparities, the failure to bridge gaps in socio-economic outcomes underscores deeper structural and policy challenges. Infrastructure, in particular, has emerged as a critical determinant of regional development, influencing productivity, connectivity, and quality of life. This thesis examines the relationship between infrastructure and regional development, with a focus on the Jungle Mahal region of Purulia district, West Bengal**—a** tribal-dominated, forested area marked by chronic underdevelopment, poverty, and exclusion from mainstream growth processes.

The study is situated within the broader theoretical framework of regional growth and disparity**,** drawing on classical and contemporary perspectives. Early theories, such as Weber's (1909) locational advantages and Hoover and Fisher's (1949) stages of regional growth, emphasized the role of resource endowments and agglomeration economies. Later, Hirschman's (1958) unbalanced growth theory and Williamson's (1965) inverted-U hypothesis posited that disparities initially widen before converging at advanced development stages. However, in regions like Jungle Mahal, convergence remains elusive, with structural bottlenecks—poor infrastructure, agrarian dependence, and governance deficits—perpetuating inequality.

Purulia epitomizes these challenges. Despite state and central interventions, the region lags in human development indicators (HDI), with low literacy rates, inadequate healthcare, and limited industrialization. Tribal communities, constituting a significant share of the population, face compounded vulnerabilities due to land alienation, climate-sensitive livelihoods, and exclusion from policy frameworks. The urban-rural divide further exacerbates disparities, as infrastructure gaps—such as unreliable electricity, deficient road networks, and digital exclusion—hinder access to markets, education, and healthcare.

This thesis examines the critical relationship between infrastructure development and regional socio-economic disparities in Jungle Mahal, Purulia district, through three central research questions: first, analyzing how infrastructural deficiencies correlate with development gaps at the sub-district level; second, investigating the historical, policy and geographical factors that sustain underdevelopment in tribal regions; and third, assessing whether targeted infrastructure investments coupled with decentralized governance can mitigate spatial inequalities. Employing a mixed-methods approach that

combines spatial analysis of infrastructure distribution, composite development indexing, and qualitative insights from tribal communities, the study seeks to bridge the gap between academic research and practical policymaking. The findings aim to contribute to contemporary debates on equitable development while providing concrete recommendations to align infrastructure policies with Sustainable Development Goals, particularly SDG 10 (reduced inequalities). Structured across the various chapters, the research progresses from theoretical foundations to empirical analysis, culminating in a proposed roadmap for rights-based, infrastructure-led development tailored to tribal regions. Ultimately, the study positions the resolution of regional disparities not just as an economic necessity but as a fundamental democratic obligation that reflects India's developmental ethos and commitment to inclusive growth. The investigation is particularly timely given the persistent development challenges in tribal areas despite decades of policy interventions, offering new perspectives on how infrastructure can serve as both an indicator and instrument of equitable regional development.

2.State of the art:

The Jangal Mahal region In Purulia district, West Bengal, is a historically marginalized area characterized by its dense forests, tribal communities and socio- economic challenges. A comprehensive literature review reveals insights into its geography, socio-economic conditions, environmental concerns, and developmental initiatives. Socio-economic disparity refers to unequal distribution of resources, wealth and opportunities among individuals and groups in society. This disparity manifests across various dimensions, including income, education, healthcare, and employment. Scholars have examined these inequalities through diverse lenses -economic, sociological, political and historical highlighting their complex and multidimensional nature. OECD reports show that wage stagnation and the shrinking middle class contribute to long terms socioeconomic divides. The literature consistently shows that socio-economic disparity is deeply entrenched and multifaceted. A literature review is important because it helps to understand existing research, identify causes and effects, guide future research, identifies gaps, supports formation of research questions, builds a theoretical framework and support policy development.

A substantial body of research has examined regional disparities in India using various methodologies and indicators. Several studies have tested the convergence hypothesis, with mixed findings.

Nayyar (2008), employing the Generalized Method of Moments (GMM), found no evidence of convergence in growth rates among Indian states. Many scholars attribute this divergence to structural reforms and liberalization, which have exacerbated regional inequalities. Two key conclusions emerge

from the literature on convergence across Indian states: (i) “unconditional divergence” is well-documented, with no signs of states moving toward similar income levels and (ii) “conditional convergence” which remains inconclusive, with varying results across studies. An alternative approach defines convergence as a reduction in income inequality over time, often measured through the standard deviation of log per capita incomes.

Majumdar and Kapoor (1980) employed multiple disparity measures, including the Gini coefficient, Theil’s entropy index, coefficient of variation, and rank analysis.

Shastri (1988) examined regional disparities in Rajasthan over 23 years (1961–1984), identifying developed and underdeveloped districts and sectors, emphasizing the need for region-specific policy interventions.

Rao (1999) conducted a pioneering national-level study on regional backwardness, with a micro-level focus on Karnataka. The research classified backward taluks and analyzed socio-economic disparities but was limited by its static approach, lacking temporal analysis.

Aziz and Krishna (1996) compiled a comprehensive volume on regional development, covering natural resources, infrastructure, intra-regional disparities, and sectoral growth.

Bhattacharya and Sakthivel (2004) highlighted how differing resource endowments lead to divergent growth paths across regions.

Singh (2004) argued that regional inequalities extend beyond income disparities to include unequal access to services, employment, and political power, advocating for balanced regional planning.

Tiwari (1985) analyzed socio-economic disparities in Uttar Pradesh, finding persistent intra- and inter-regional gaps despite policy efforts. Recent studies have adopted a more granular approach.

Rajeeb Samanta (2015) examined block-level social disparities in Paschim Medinipur, West Bengal, emphasizing that economic development alone is insufficient without social progress.

Bipul Chandra Sarkar (2013) explored socio-economic factors contributing to regional imbalances in West Bengal, noting that both natural and man-made factors drive uneven development. Gender disparities have also been a focus, with **Anindita Das Majumdar (2010)**Gender disparities have also been a focus and highlighting gaps in health, education, and workforce participation among rural women in West Bengal.

Biraj Kanti Mondal (2014) studied rural development challenges in the Sundarbans, stressing the need for better infrastructure and policy implementation. The persistence of regional disparities has socio-political ramifications, particularly in conflict-prone areas.

Md. Iqbal Sultan (2014) and John Harriss (2010) analyzed the Maoist insurgency in India's "Red Corridor," linking underdevelopment and state neglect to unrest.

3. Statement of the Problems:

The Jungle Mahal region in Purulia District, West Bengal, remains one of India's most socio-economically marginalized areas, plagued by chronic poverty, inadequate infrastructure, low literacy, poor healthcare, and stagnant economic growth (Sen, 2018). The need of the hour is to study and examine the multi-dimensional disparities impeding sustainable development in this tribal-dominated region, with a particular focus on economic vulnerability. The local economy relies heavily on rain-fed subsistence agriculture, daily wage labor, and minor forest produce—livelihoods increasingly threatened by climate variability, deforestation, and unstable market conditions (Bhattacharya & Roy, 2022). Persistent agricultural distress stems from insufficient irrigation, outdated farming techniques, limited credit access, and the absence of agro-processing industries, resulting in low productivity and recurring food insecurity (Sharma, 2021). Compounding these challenges is the alarming rate of outmigration, particularly among youth, driven by the scarcity of local employment opportunities and pushing workers into precarious urban informal sectors (Das, 2019). To address these systemic issues, the study evaluates potential interventions—including climate-resilient farming, microfinance systems, and skill-based vocational training—as pathways toward rural economic revitalization and inclusive growth.

An educational disparity in the region is another crucial issue that perpetuate cycles of generational poverty and hinder economic progress. The study will examine the critical educational gaps in Jungle Mahal, where high ST/SC dropout rates persist due to poverty, gender bias, poor infrastructure, and language barriers (Chakraborty, 2018). Inadequate teacher training, digital resources, and culturally insensitive curricula further marginalize tribal students (Basu, 2017). Healthcare access remains dire, with shortages of PHCs, medical staff, and medicines (Gupta, 2019). High maternal/infant mortality, malnutrition, and preventable diseases are exacerbated by poor sanitation and health awareness (Mandal & Sen, 2020). The research evaluates existing policies (NRHM, Ayushman Bharat) and proposes solutions—strengthening school infrastructure, vocational training, telemedicine, and community health outreach—to address systemic disparities (Roy, 2018; Sarkar, 2021).

The study will also examine the critical infrastructural gaps in Jungle Mahal, including inadequate roads, limited electricity, and poor digital connectivity, which isolate communities and hinder access to essential services (Choudhury, 2019; Banerjee, 2016). Additionally, it will analyze how the region's history of Naxalite conflict and weak governance has undermined development efforts (Das & Saha, 2021), and explore ways to strengthen local administration through the Panchayati Raj system (Sharma, 2019). The research seeks to identify solutions for improving infrastructure and governance to foster inclusive growth.

In this era of industrialization land rights violations in Jungle Mahal, where tribal displacement from mining and conservation projects has caused livelihood losses without proper rehabilitation is a major issue (Roy & Das, 2020). This study will try to assess how land alienation and forest laws impact indigenous communities (Sarkar, 2021). Additionally, it will analyze gender disparities, exploring how SHGs and microfinance can empower marginalized women facing education, healthcare and economic barriers (Chakraborty, 2020; Basu, 2019). The research aims to propose equitable land policies and women's empowerment strategies for inclusive development.

Lastly this study will analyze climate change impacts on Jungle Mahal's fragile ecosystem, where water scarcity, deforestation and erratic weather threaten livelihoods (Mandal, 2019; Gupta, 2021). It will propose community-based adaptation strategies while addressing the exclusion of tribal voices in policymaking (Sen, 2022). By integrating indigenous knowledge and local governance (Mukherjee, 2021), the research aims to develop an inclusive framework for sustainable development that addresses the region's multidimensional challenges (Bhattacharya, 2020).

4. Study Area:

Manbhum district within the state of undivided Bihar during Independence. Geographically the district extends between 22^0 42’36” N. – 23^0 44’17” N. latitude and 85^0 49 ‘30’’ E. – 86^0 51’05” E. longitude covering a total area of 6530 sq.km.(Paul & Patra, 2016).The research analyzes socio-economic

disparities and developmental variations at the Panchayat level across these blocks during the 2001-2011 period.As the panchayat level assessment has been considered, panchayats have been taken as unit of analysis. Sixty-six panchayats (Fig.–1) located in eight C.D. Blocks (i.e. Jhalda-I and II, Arsha, Baghmundi, Balarampur, Barabazar, Manbazar-II, Bundwan) of Purulia district has been chosen for

this analysis. This eight C.D. Blocks are known as Jungle Mahal blocks designated by Government of West Bengal. From 2011 onwards, government of West Bengal has developed a ministry to reform these backward regions, which were basically famous for their naxalite movement and named as 'Paschimanchal Unnayan Parshad' (Paul & Patra, 2016).As per 2011 census total population of the district is 2930115, out of which 87.26 % are residing in rural areas and 12.7% are in urban areas. About 51.09 % of the populations are males and 48.91% are female. The percentage of Scheduled Caste and Scheduled tribes are 19.38% and 18.45% and sex ratio 957 and decadal growth rate 15.52%(2001-2011). The table I below presents the Panchayats from each studied block in Jungle Mahal, Purulia district.

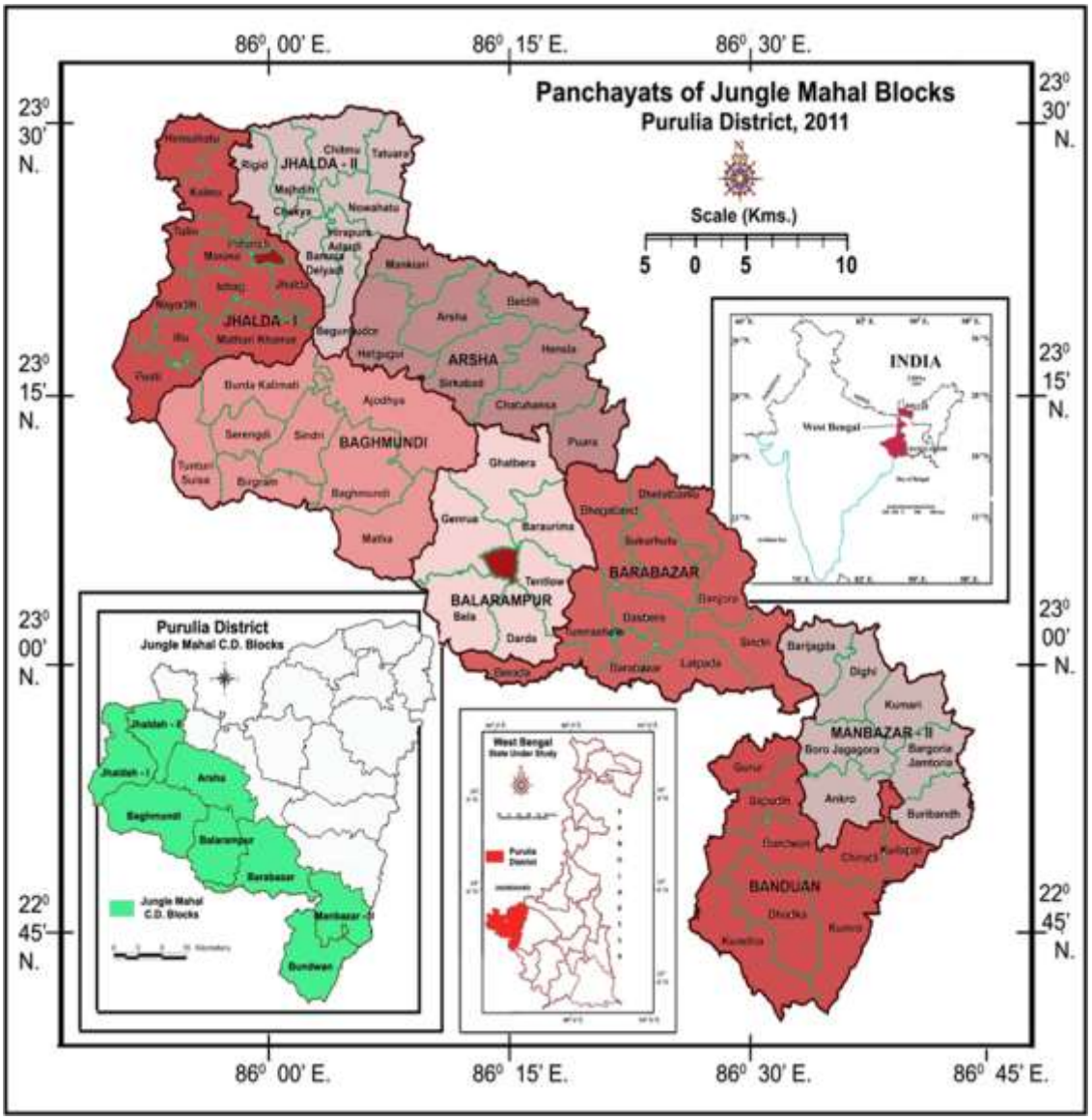

Figure 1. Map showing theboundings of the study area (green) and the eight blocks that are to be sampled.

1	Jhalda – 1	Hensahatu, ichag, Iloo – Jargo, jaldadarda, Kalma, Mark – mosina, Mattari – Khamar, Nayadih, Palasti, Tulin	4	Barabazar	Baghaband, Banjara, Bansbera, Barabazar, Berado, Dhelat, Latpara, Sindri, Sukurhutu	7	Bandwan	Bandwan, Chirudih, Dhadka, Gurur, Kuilapal, Kumra, Kunchila, Supudih
2	Jhalda – 2	Bamima – Beliadih, Begurkadam, Ckckya, Chitmu, Hirapur, Maihidihi, Rigid	5	Balarampur	Balarampur, Baraurma, Bela, Darda, Gerua, TEntlow, Ghatbera	8	Manbazar	Ankro– Borakadam, barjaria, Imtoria, Bari- iagda, Baro – jara – gera, Buribandh, Dighi, Kumari
3	Bagmundi	Ajodya, Baghnide, Birgram, Barda, Kalimati, Matha, Sindri, Tutuni – suisa,	6	Arsha	Arsha, Beldih, Chatuhansa, Hensla, Hetgugui, Mankiari, Puara, Sirkabad			

Table-I (Panchayats from each studied block in Jungle Mahal)

5. Objectives of the investigation and motivation:

1. To find out Socio-economic condition of the Panchayet of Jungle mahal blocks under Purulia district.

2. To appraise the distribution and growth pattern of population in the panchayets of Jangle Mahal blocks under Purulia district.

3. To study the degree of inequality in housing condition and access to basic amenities and accumulation of assets at panchayet level of Jungle mahal blocks, Purulia.

4. To measure Rural livelihood and vulnerability of Jungle mahal blocks under Purulia district.

5. To explain Role of Central and State government and NGOs for Rural development.

6.Research hypothesis or research questions:

I**. Research hypothesis:**

To find out Socio-economic Condition of the Panchayets in Jungle Mahal Blocks under Purulia

- H_0: There is no significant difference in the socio-economic conditions across different panchayets in the Jungle Mahal blocks of Purulia district.
- H_1 : Significant disparities exist in the socio-economic conditions across different panchayets in the Jungle Mahal blocks of Purulia district due to variations in income levels, employment opportunities, and access to resources.

To appraise the Distribution and Growth Pattern of Population in the Panchayets of Jungle Mahal Blocks under Purulia district.

- H_0: The distribution and growth of the population in the Jungle Mahal blocks of Purulia are uniform across all panchayets.
- H_1: The population distribution and growth in the Jungle Mahal blocks are uneven, influenced by factors such as migration, economic opportunities, and geographical constraints.

To study the degree Inequality in Housing Conditions, Access to Basic Amenities, and Asset Accumulation

- H_0: There is no significant inequality in housing conditions, access to basic amenities, and asset accumulation among the panchayets of Jungle Mahal blocks.

- H_1: There is a considerable degree of inequality in housing conditions, access to basic amenities, and asset accumulation at the panchayet level, influenced by socio-economic status and policy implementation.

To measure Rural livelihood and vulnerability of Jungle mahal blocks under Purulia district.

- H_0: Rural livelihoods in the Jungle Mahal blocks are stable and not significantly vulnerable to economic and environmental factors.

- H_1: Rural livelihoods in the Jungle Mahal blocks are highly vulnerable due to factors like dependency on agriculture, seasonal employment, and climate variability.

To explain the Role of Central and State Government and NGOs in Rural Development.

- H_0: Government initiatives and NGO interventions have had no significant impact on rural development in the Jungle Mahal region.

- H_1: Government policies and NGO interventions have played a crucial role in improving rural development indicators in the Jungle Mahal region, though challenges remain in effective implementation.

II. Research Questions:

1.What are the key socio-economic indicators of the panchayets in the Jungle Mahal blocks of Purulia?

2.What are the major factors influencing the socio-economic conditions of the region?

3.How does the demographic composition (age, gender, literacy) vary across panchayets?

4.How does access to basic amenities (electricity, drinking water, sanitation, healthcare) vary across the region?

5.What socio-economic factors contribute to inequality in living standards in Jungle Mahal?

6.What are the major risks and vulnerabilities faced by rural households in terms of employment, income security, and natural calamities?

7. How effective are existing government and NGO-led rural development programs in addressing inequalities and improving livelihoods in Jungle Mahal?

7.Research design and methodology:

This study examines tribal and non-tribal agricultural systems in Jungle Mahal (26.86% tribal population), where both groups coexist geographically, influencing each other's practices. Adopting a mixed-methods approach:

A. Quantitative Analysis:

- Measured infrastructure accessibility using the popularly used Mathur's mean spacing formula:

$$D = 1.0746\sqrt{(A/N)}$$

- Assessed internal reliability via Cronbach's Alpha.
- Developed a composite development index through factor analysis, weighting standardized variables ($Z_j = [X_j - X_m]/\sigma_j$).

B. Qualitative Insights:

- Evaluated tribal agro-ecological knowledge, recognizing its shift from "laggard" to "innovator" status in sustainable practices.
- The methodology integrates spatial, statistical, and socio-cultural dimensions to analyze disparities and sustainable agricultural adaptations.

C. Sample Design

The study is based on primary data collected from each panchayat(rural area) from Jungle Mahal blocks, Purulia district. The most straightforward sort of sampling technique is the simple random sample, where basics from a list or other sampling frame has been selected randomly, usually by using random numbers. Each element in the sampling frame is owed a unique identifying number. Numbers are then read from a random number table and elements in the frame with those numbers are included in the sample.20 households from each panchayat were surveyed using a structured questionnaire to investigate the status of socio-economic disparity and development of the study area. The surveyed data also supplemented with quantitative data taken from Census of India, 2011,NFHS, Purulia District, West Bengal Series.

a. Tentative Chapterization:

Introduction

CHAPTER 1: Geographical Background**.**

CHAPTER 2: Population: Growth, Distributional pattern and density**.**

CHAPTER 3: Analysis of Socio-economic condition of the study area.

CHAPTER 4: Inequality in housing condition and basic amenities**.**

CHAPTER 5: Evaluation of development programmes**.**

CHAPTER 6: Rural livelihood and vulnerability**.**

CHAPTER 7: Problems and planning strategy of development**.**

Conclusion

Bibliography

Appendix

8. Source of data and tools to be used in collection of data:

The study will be taken place with the help of primary data and secondary data through the intensive field survey in the several panchayets of Jangle Mahal blocks of Purulia. The Primary information is supplemented with secondary data whenever needed. To estimate a quantitative weight of a variable (i.e. number of primary school per 1000 population) total population of each ward as per census of India, 2011 has been projected to 2025 during field investigation.

In order to assess the unequal resource distribution leading to the variation in development among core area, intermediate area and peripheral part of panchayats,the samples have been selected from each part of the panchayats.All 66 panchayats have been selected for purposive sampling. The information regarding number of selected socio- economic and facility- utility services has been collected non partially,i.e. total number of concerned facility was ensured through field investigation.

9. Analysis of data:

This study observes to appraise the spatial distribution of various demographic variables in the panchayets of Jangle Mahal blocks under Purulia district of West Bengal. The Remote Sensing and GIS software (QGIS) has been carried out for spatial mapping in the present study. In case of, demographic (socio-economic, livelihood & vulnerability, inequality & disparity) analysis will be used statistical software likes Excel, SPSS-26 & STATA-16.

10. Significance of the study:

This study holds critical importance as it examines the multi-dimensional challenges faced by Jungle Mahal, one of India's most socio-economically disadvantaged regions. Comprising parts of Purulia, Bankura, West Midnapore, and Jhargram districts, the region struggles with persistent poverty, underdevelopment, and the marginalization of tribal communities. The research focuses on key areas:

1. **Economic Disparities** – The majority rely on subsistence farming, forest produce, and daily wage labor, making them vulnerable to climate shocks and market fluctuations. High youth outmigration reflects the lack of local livelihood opportunities, necessitating skill development and rural industrialization.

2. **Education & Healthcare Gaps** – Poor infrastructure, teacher shortages, and language barriers hinder education, while inadequate health facilities contribute to high maternal and child mortality rates. The study evaluates policy interventions to improve literacy, vocational training, and healthcare access.

3**. Infrastructural Deficits** – Weak road connectivity, electricity shortages, and digital exclusion isolate villages, restricting access to markets and services. Improving rural infrastructure is vital for inclusive growth.

4. **Governance & Political Challenges** – Historical Naxalite conflict has left a legacy of distrust in governance. Strengthening Panchayati Raj institutions and ensuring tribal participation in policymaking are essential for equitable development.

5**. Land Rights & Gender Inequality** – Tribal communities face displacement due to mining and conservation projects, while women experience limited access to education, healthcare, and economic opportunities. The study advocates for land rights, women's empowerment through SHGs, and gender-sensitive policies.

6. **Climate Vulnerability**– Erratic rainfall, deforestation, and soil degradation threaten agriculture-based livelihoods. Community-led adaptation strategies are needed for sustainable development.

By analyzing these interconnected challenges, the study provides actionable recommendations to bridge disparities, enhance governance, and promote inclusive growth in Jungle Mahal. Its findings will aid policymakers, NGOs, and development agencies in designing targeted interventions for long-term socio-economic transformation.

11.Contribution to the existing knowledge:

This study significantly advances understanding of disparity and development in Jungle Mahal, Purulia, by analyzing socio-economic conditions, population dynamics, housing inequality, rural livelihoods, and governance. It reveals how geographic isolation, agrarian dependence, and infrastructural deficits perpetuate poverty, emphasizing the need for context-specific policies (Ray & Sanyal, 2016; Sengupta & Bandyopadhyay, 2015).

The research highlights uneven population growth, where migration and natural increases outpace infrastructure development, straining resources in peri-urban areas while leaving remote regions underserved (Chakrabarti, 2017; Ghosh & De, 2019). Housing disparities and inadequate access to water, sanitation, and healthcare exacerbate marginalization, particularly for tribal communities, due to poor policy implementation (Biswas & Saha, 2018; Pal & Ghosh, 2020).

Livelihood vulnerabilities are critically examined, showing how climate change, land degradation, and market fluctuations threaten agriculture and forest-based economies, pushing households into debt (Roy & Sen, 2016; Das, 2018). The study underscores the limited impact of government schemes (e.g., MGNREGA, PMAY) due to weak local governance, while NGO efforts in education and healthcare face scalability challenges (Hazra et al., 2024; Pal & Chatterjee, 2021).

By integrating these dimensions, the study advocates for participatory, localized interventions that combine economic resilience, social equity, and environmental sustainability. It calls for stronger collaboration between governments, NGOs, and communities to address Jungle Mahal's unique challenges, moving beyond generic solutions toward inclusive development.

12. Its relevance to the present-day problem and needs to the study:

The study of disparity and development in the Jungle Mahal region of Purulia District, West Bengal, India, is of profound relevance to contemporary development challenges faced by marginalized rural regions, particularly those that are home to indigenous and tribal communities. The Jungle Mahal area has long been neglected in terms of infrastructure, education, healthcare, and economic development, exacerbating regional disparities. Despite governmental efforts and welfare schemes, issues such as poor health indicators, low literacy rates, lack of employment opportunities, and environmental degradation persist in the region. The study highlights the intersectionality of multiple factors that contribute to developmental disparities, including poor access to basic services, health challenges such as fluorosis, and the historical marginalization of indigenous communities

13.Future work:

Building on this study, future research should:

1. **Expand Geographic Scope**-Conduct comparative studies across other tribal-dominated regions (e.g., Odisha, Jharkhand) to identify patterns in socio-economic disparities and policy effectiveness.

2. **Longitudinal Assessments**-Track the impact of implemented interventions (e.g., MGNREGA, SHGs) over 5–10 years to evaluate sustainability and scalability.
3. **Climate Resilience Strategies**-Investigate community-based adaptation models for agriculture and forest livelihoods, integrating traditional knowledge with modern techniques.
4. **Governance & Participation**-Examine the efficacy of decentralized governance (e.g., Panchayati Raj reforms) in enhancing tribal representation and program implementation.
5. **Technology & Innovation**-Explore digital inclusion (e.g., mobile-based education, telemedicine) to bridge gaps in remote areas with low infrastructure.
6. **Gender-Intersectional Analysis**-Study how caste, ethnicity, and gender intersect to shape access to resources, with targeted recommendations for marginalized women.
7. **Private Sector Engagement**-Assess opportunities for public-private partnerships in skill development, agro-industries, and renewable energy projects.

Future research on Jungle Mahal should adopt a multidisciplinary approach to address interconnected socio-economic, environmental, and governance challenges. Combining academic rigor with community engagement, studies must co-create sustainable solutions that value indigenous knowledge and empower marginalized groups. This approach will both advance development scholarship and transform Jungle Mahal into a model for inclusive, community-led progress across tribal India.

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